

NOAA/NCEI

Climate Data at NCEI

Data Flow; Data Rounding and Means; & GHCN-Daily Corrections

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*Datzilla Programmer/COOP Focal Point (STG),
NOAA National Centers for Environmental Information*

Overview

- Data Rounding and Means
- Data Flow For Incoming COOP
- COOP/WxCoder3 Data Processing Schedule
- GHCN-Daily And Datzilla Corrections
- Corrections For LCD Published ASOS Stations
- NCEI's Feedback Loops To NWS WFO's
- Questions?

Data Rounding and Means

Data Rounding and Means

- National Data Stewardship Team (NDST) Recommendations
 - “Round half up asymmetric” or “round up”
 - +1.5 rounds up to +2
 - -1.5 rounds up to -1.0
 - Round in the positive direction always
 - No rounding at all prior to the last step in a calculation (keep full precision)
 - No rounding of Summed TMAX or Summed TMIN before using them to calculate the Monthly Mean (TAVG)

If Averaging by
element column
(Daily TMAX or Daily
TMIN), keep
precision as-is and
don't round until
after your Monthly
TAVG has been
computed:

$$(\text{Monthly TMAX Average} + \text{Monthly TMIN Average})/2$$

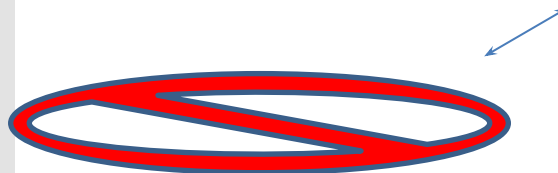
Keep Precision as-is
(XX.xx...) until after
the averages have
been calculated

If Averaging with
Daily Mean (each
day's TAVG), keep
precision as-is; don't
round:

$$(\text{Sum of Daily TAVG})/2$$

Round at the very
last step:

- 71.51613
becomes 71.5
- 46.09677
becomes 46.1
- 58.80645
becomes 58.8

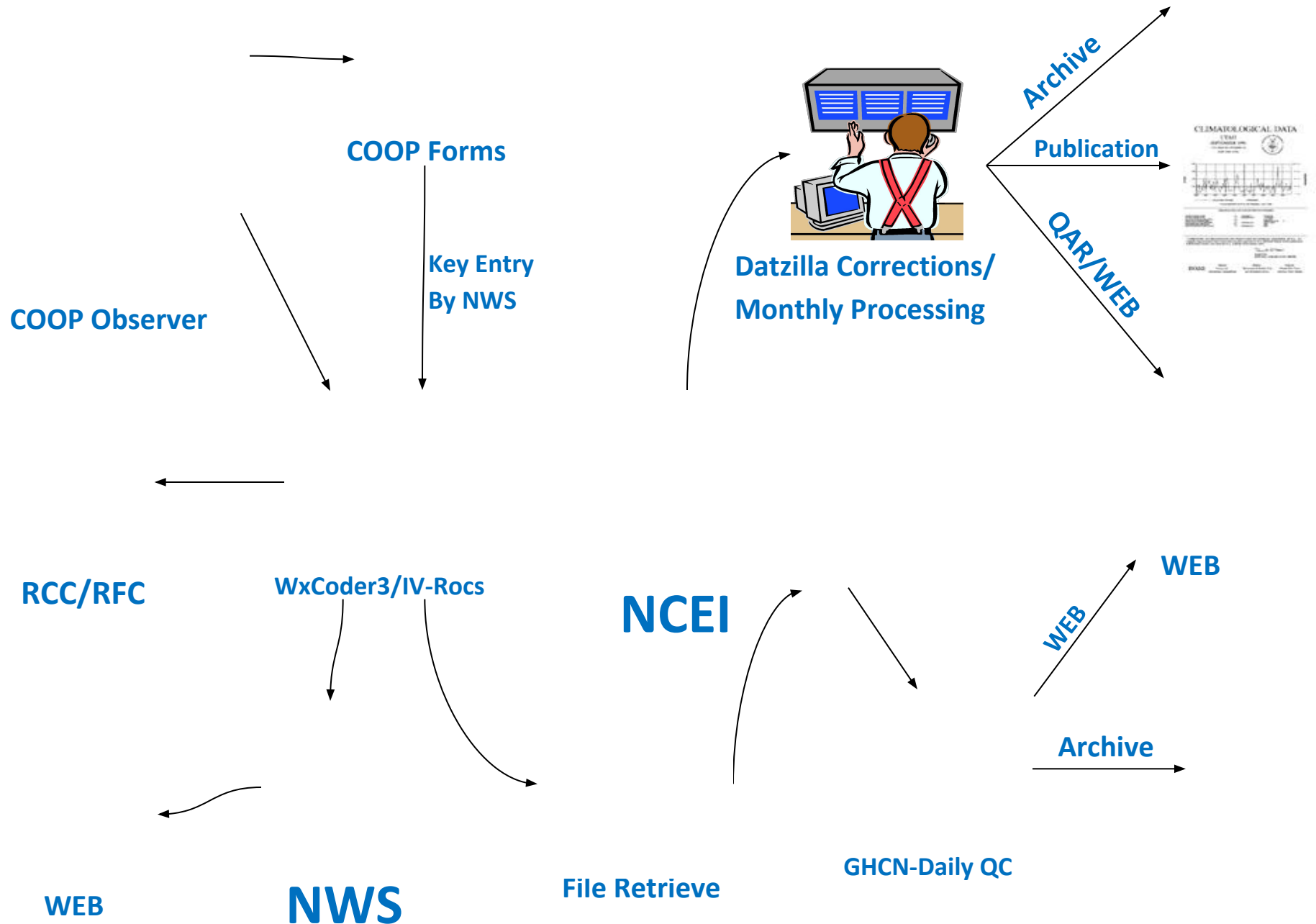


Data Rounding and Means

- NDST's Recommendations
 - By WMO Rule, Monthly Temperature Values Can Be Calculated Only If (5/3 Rule):
 - 5 days or fewer are missing or flagged as invalid
 - ***AND***
 - No more than 3 missing days are consecutive
 - Recommendations for Seasonal Temperature Calculations (Seasonal and Annual) are available from your NDST Representative upon request

Data Flow For Incoming COOP

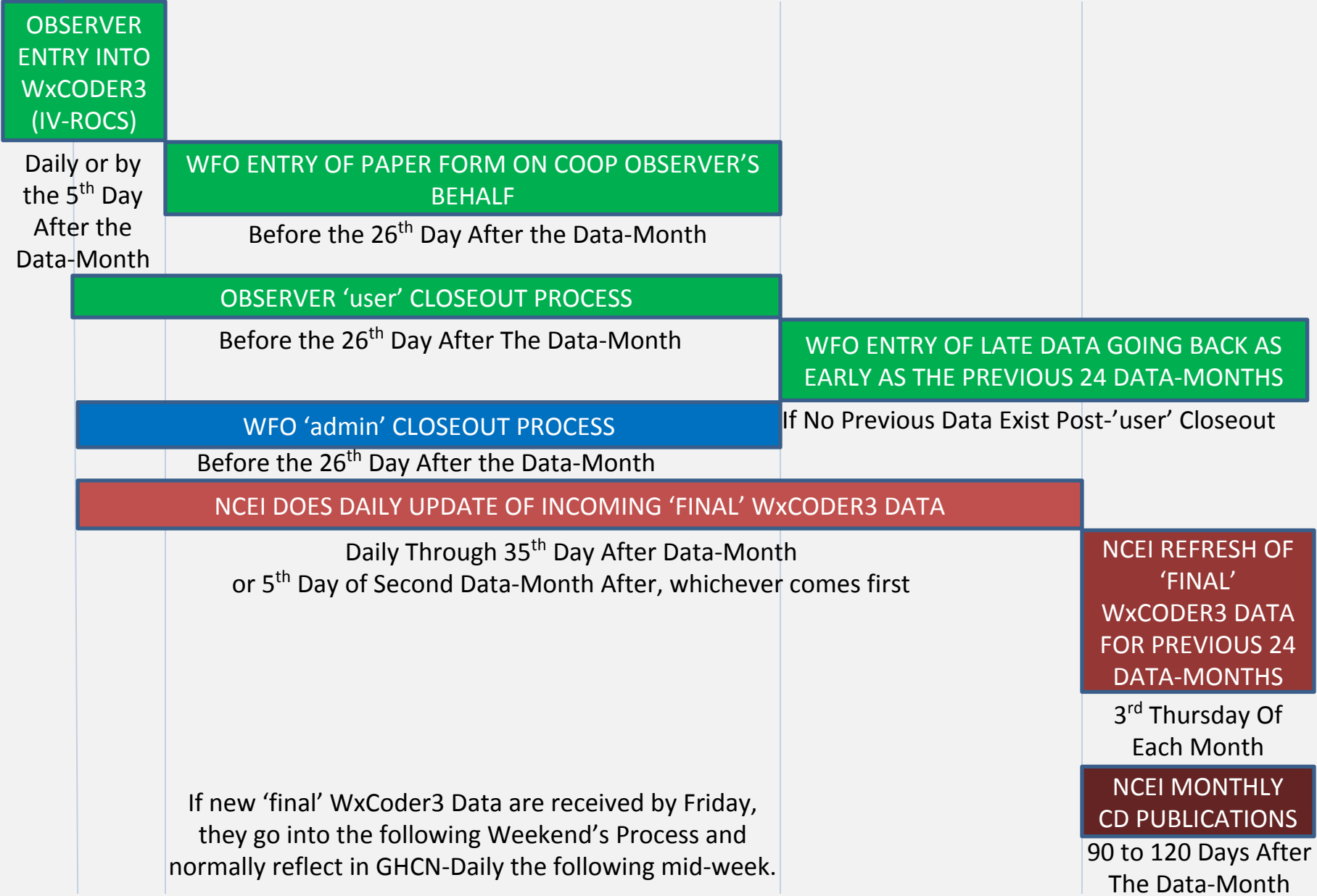
COOPERATIVE DATA FLOW



COOP/WxCoder3 Data Processing Schedule

WxCODER3 PROCESS FLOW FROM NWS COOP OBSERVER TO WFO

Daily 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 Past 24 Data-Months



Progress of WxCoder3 'admin' Closeout Process for NWS COOP Stations

94.9%

87.8%
→

50.5%
→

24.4%
→

8.8%
→

Number of Days After the End Of
The Data-Month

Total COOP
Stations
Officially
Documented
As WxCoder3 or
IV-ROCS
Submitting
COOP Station:
6716

Total Number of
Published COOP
Stations:
6827

Average of the Total Number of WxCoder3 Stations
with 'admin' Closeout Process Completed

WxCoder3 Late Data Submissions

- Once either a 'user' close-out or 'admin' close-out has been completed within WxCoder3:
 - **no further additions or modifications to observations** for the data-month in question can be accepted from observers.
 - Modifications can be made **only after a re-opening of the station**.
- An admin user may re-open a station within WxCoder3 after 'user' close-out **ONLY IF** both of the following conditions are met:
 - Today's date is **before the 26th of the month** following the data-month being re-opened
 - The month being re-opened has **zero** observations entered, and **within the past 24 data-months** (or previous two data-years).
- If both of the aforementioned conditions are **not met**, a Datzilla Ticket **must be submitted** by the NWS WFO.

WxCoder3 Late Data Submissions

- Questions about WxCoder3 Late Data Submissions:
 - Bryant Korzeniewski at NCEI (Bryant.Korzeniewski@noaa.gov).
- Issues related to the WxCoder3 System itself?
E-mail WRCC's WxCoder3 Team:
 - (wxcoder@dri.edu)

GHCN-Daily and Datzilla Ticket Resolutions

Question #1 from Climate Focal Points

- **Question:** QC checks at NCEI throw out good data. There needs to be a better system in place to send the flagged data to the WFO for review before tossing the data out as bad. What is NCEI's plan to improve on this issue?
- **Answer:** NCEI does not toss out data. Rather, the data values that fail GHCN-Daily's QC Check are marked as invalid. It is dependent on the system or access point that makes GHCN-Daily's data available to determine how they appear:
 - Reflect as missing in xmACIS and ThreadEx
 - NCEI's Climate Data Online (CDO) Website gives the data user the ability to download the data values as-is and to download the Quality Flags which indicate which GHCN-Daily QC Check that it's failed.
 - NCEI's CD Publications for 2011 through Present provides the original data value and indicates whether a Temperature or Precipitation Value was flagged as invalid by GHCN-Daily and by which QC Check that it's failed.
- Stay tuned within this presentation for details on the GHCN-Daily Flag Files

GHCN-Daily

- GHCN-Daily has **13** QC Checks Where Flags Are Applied To Any Station's Complete Period-Of-Record (Historical and Incoming)
 - Mark Data Values As Invalid For the First QC Check That It Fails (normally reflects as missing in xmACIS)
- Most Common GHCN-Daily QC Flags Applied to Incoming Data
 - Failed Spatial Consistency Check (Quality Flag of 'S')
 - Failed Climatological Outlier Check (Quality Flag of 'O')
 - Failed Internal Consistency Check (Quality Flag of 'I')
 - Failed Check on Length of Multiday Period (Quality Flag of 'L')
 - **Otherwise known as SOIL (S-O-I-L)**

Failed Spatial Consistency Check (QFLAG1 of 'S')

day	TMAX		TMIN		TOBS	
01	40	7	24	7		
02	42	7	23	7		
03	49	7	27	7		
04	45	7	23	7	25	7
05	36	7	25	7	26	7
06	41	7	25	7	32	7
07	44	7	32	7	42	7
08	46	7	41	7	45	7
09	45	7	33	7		
10	34	7	6	7		
11	27	7	7	7	27	7
12	41	7	26	7	32	7
13	35	7	18	7	27	7
14	55	7	27	7	41	7
15	62	7	37	7	37	7
16	37	7	2 S7			
17	37	7	15	7		
18	19	7	2	7		
19	40	7	2	7	24	7
20	27	7	22	7	23	7
21	29	7	23	7	26	7
22	28	7	22	7	23	7
23	30	7	23	7		
24	32	7	30	7		
25	51	7	23	7	42	7
26	57	7	29	7	31	7
27	41	7	16	7	17	7
28	49	7	17	7	36	7
29	57	7	26	7	30	7
30	65	7	30	7		
31	62	7	39	7		

- How To Resolve?
 - Check Day 16's TMIN value to ensure that they've been correctly entered into WxCoder3.
 - If this value is correct, it needs to be unflagged by NCEI via Datzilla Ticket.
- What's actually happened here?
 - NWS WFO confirms that the observer entered Day 16's TMIN value incorrectly. TMIN value should be changed from 2 to 23.

Failed Climatological Outlier Check (QFLAG1 of 'O')

- How To Resolve?
 - Check Day 08's PRCP of 2.50" to ensure that it's been entered correctly into WxCoder3.
 - If the value is correct, it needs to be unflagged by NCEI via Datzilla Ticket.
- What's actually happened here?
 - NWS WFO confirms that Day 08's PRCP has been entered incorrectly by the observer. Day 08's PRCP value should be corrected to 0.25".

Failed Internal Consistency Check (QFLAG1 of 'I')

- How To Resolve?
 - Check Day 27's SNOW of 0.0" and SNWD of 0" and Day 28's SNOW of 0.0" and SNWD of 5" to ensure they've been correctly entered into WxCoder3.
 - If these values are correct, they need to be unflagged by NCEI via Datzilla Ticket.
- What's actually happened here?
 - NWS WFO confirms that Day 27's SNWD has been entered incorrectly by the observer into WxCoder3. Day 27's SNWD value should be corrected to 6".

Failed Internal Consistency Check (QFLAG1 of 'I')

- How To Resolve?
 - Check Day 12 and Day 13's SNOW and SNWD values and Day 17 and Day 18's SNOW and SNWD values to ensure they've been correctly entered into WxCoder3.
 - If these values are correct, they need to be unflagged by NCEI via Datzilla Ticket.
- What's actually happened here?
 - NWS WFO confirms that Day 12 and 13's SNOW and SNWD values and Day 17 and 18's SNOW and SNWD values are indeed valid. Strong winds at the site caused the SNWD to increase up 5" between Days 12 and 13 and up 7" between Days 17 and 18.

Failed Internal Consistency Check (QFLAG1 of 'I')

- How To Resolve?
 - Check Day 22's TOBS of 62 and Day 23's TMAX of 58 to ensure they've been correctly entered into WxCoder3.
- What's actually happened here?
 - NWS WFO confirms that Day 23's TMAX of 58 has been entered incorrectly by the observer into WxCoder3. Day 23's TMAX value should be corrected to 62 to match previous day's TOBS value.

Failed Check On Length of Multiday Period (QFLAG1 of 'L')

- How To Resolve?
 - Check the number of days in the “Multi-day Accumulation (PPA)” column for Day 26 is correct. Should it be 22 or 1?
 - If number of days is 22, then ensure that Days 05 through 25 are noted as being ‘M’ for Missing. (‘S’ appears to be an acceptable entry, as well.)
- What’s actually happened here?
 - NWS WFO confirms that this is actually a 22-day accumulation ending on Day 26. Days 05 through 25 should have been entered as ‘M’ (or ‘S’).

Failed Check On Length of Multiday Period (QFLAG1 of 'L')

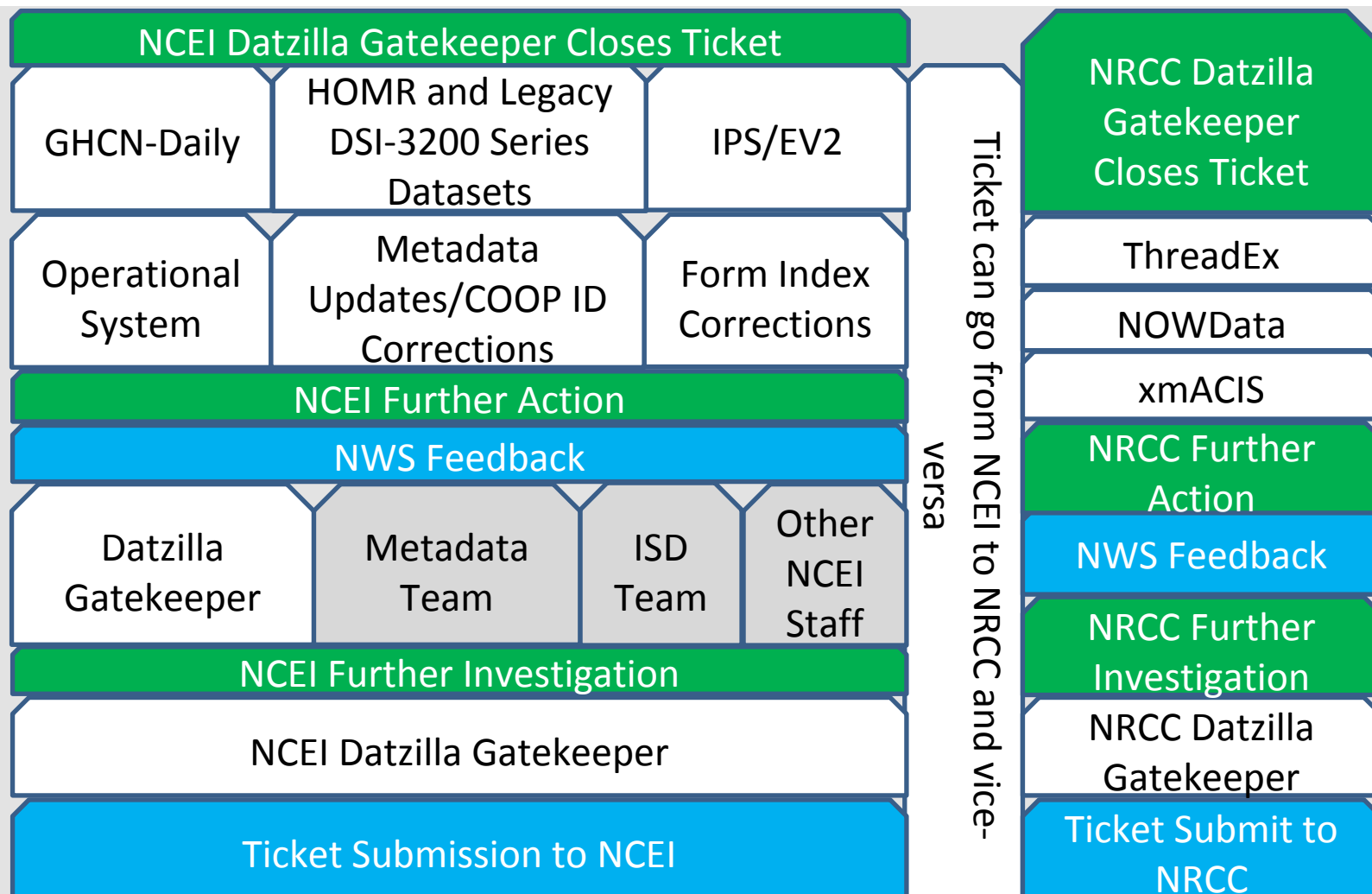
- How To Resolve?
 - Check the number of days in the “Multi-day Accumulation (PPA)” column for Day 22 is correct. Should it be 2 or 1?
 - Also, is Day 21’s Single-Day PRCP value of 0.01” correct?
 - If number of days of accumulation for Day 22 is 1, then ensure that “Multi-day Accumulation (PPA)” is entered as one into WxCoder3.
 - If Day 21’s PRCP is incorrect, ensure that it’s noted as being ‘M’ for Missing. (‘S’ appears to be an acceptable entry, as well.)
- What’s actually happened here?
 - NWS WFO has yet to submit a Datzilla Ticket for this particular issue. Assumption here is that Day 22’s MDPR should be a Single-Day PRCP value, but we have to get NWS WFO’s confirm via Datzilla Ticket submission before correction can be applied to the GHCN-Daily Dataset.

Flag Rates For Temperature Values

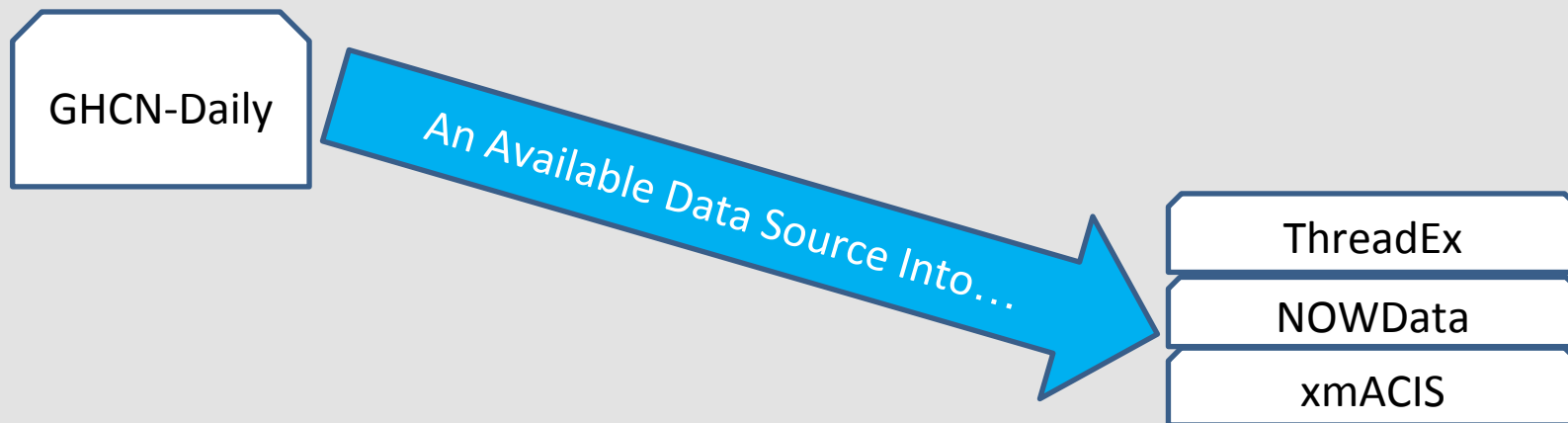
Question #2 from Climate Focal Points

- **Question:** There is no clear timeline on resolving tickets in Datzilla. How can NCEI improve communication and coordination with the WFOs on this front? How can WFOs know where the status of a ticket within Datzilla?
- **Answers:**
 - Check the latest comment posted at the bottom of the Datzilla Ticket:
 - Reply if the Datzilla Gatekeeper is awaiting your response to their questions.
 - If an action is needed from NCEI's end, the last comment or previous comments before that should provide you with what is currently outstanding.
 - When in doubt, post a comment requesting a status update within the "Additional Comments" field of the Datzilla Ticket ***AND*** Click the Commit Button.
 - Each ticket isn't like one of the others:
 - Some tickets require only one data correction and can be resolved quickly
 - Others tickets request:
 - Corrections to hundreds, even thousands, of data values
 - Adding data which requires Metadata verification and that they're observed on original forms.
 - Uploading forms onto our EV2 Website.
 - Changing Station ID's within Legacy Datasets post-Metadata Team and GHCN-Daily Team Verifications.

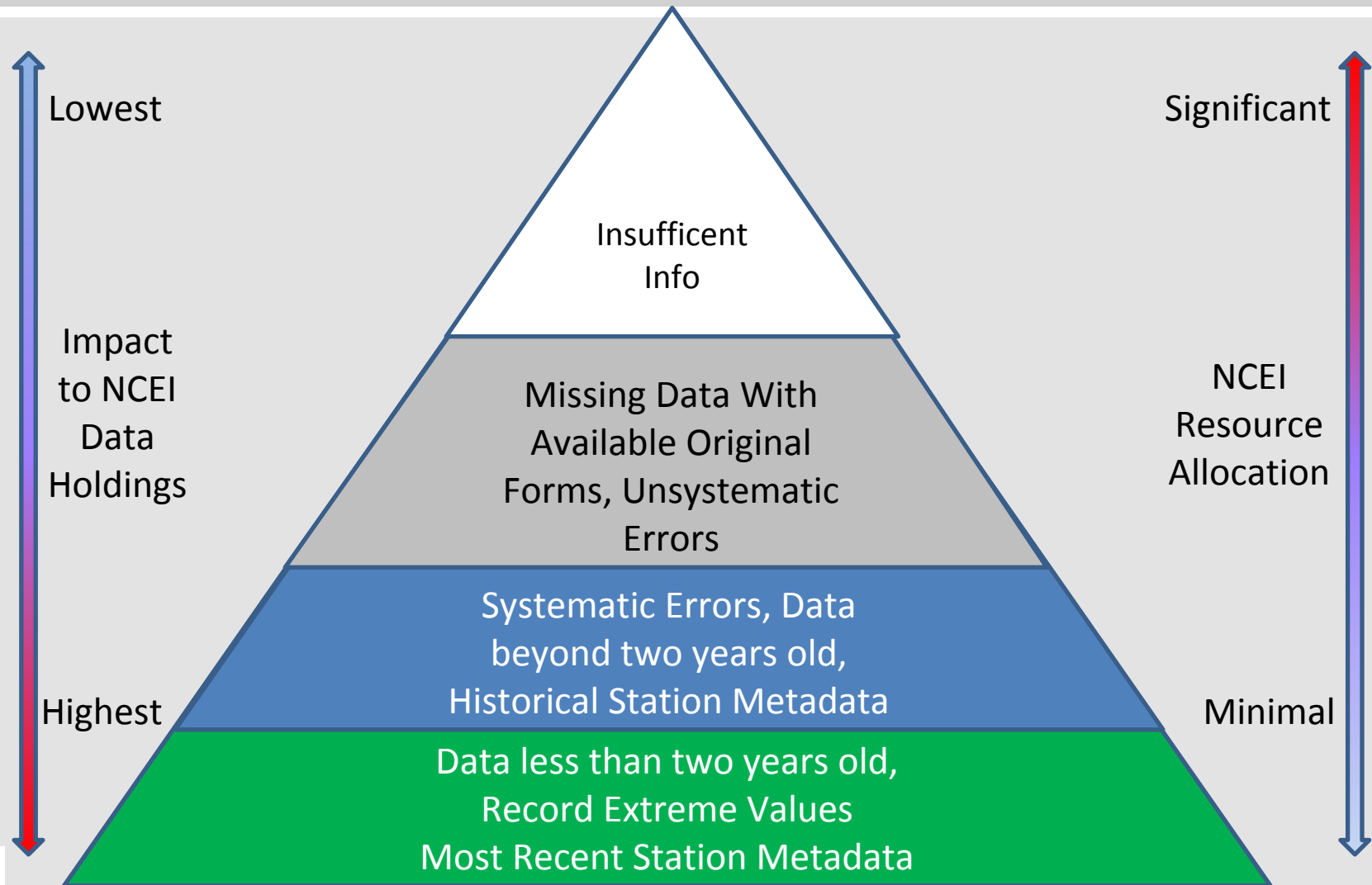
Flow of Datzilla Ticket Resolutions



Flow of Datzilla Ticket Resolutions



Priority of Datzilla Ticket Resolutions



Priority of Datzilla Ticket Resolutions

NO PRIORITY

**GOAL
DENIED!!!**

Non-NCEI
Systems

Doesn't affect NCEI's
data archives

Data issues not in
NCEI's data archives

Late WxCoder3
Submissions***

Other Data Provider
Issues

No available
documentation

Helpful Hints For Datzilla Ticket Resolutions

- Be Frugal about Datzilla Ticket Submissions.
- Expect More Time For More Lengthy Datzilla Ticket Submissions.
- Reply To Questions Within a Datzilla Ticket When Asked.
- Notify the Datzilla Gatekeeper Within the Ticket If You Need More Time to Reply.

Helpful Hints For Datzilla Ticket Resolutions

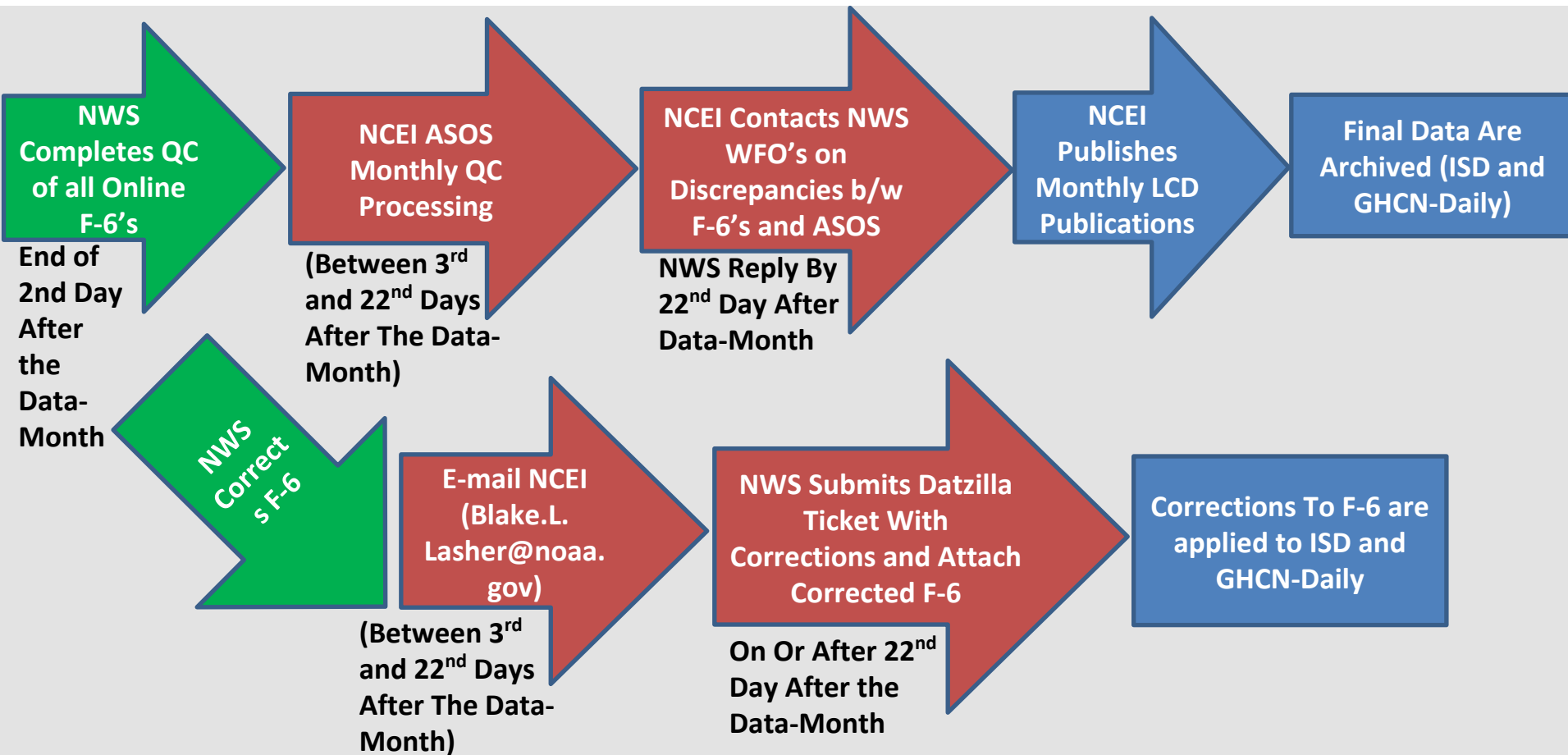
- Treat Datzilla as a two-way communications tool.
- Do not close or reopen a Datzilla Ticket!
- Post all comments related to an existing Datzilla Ticket within the ticket itself
 - Within the “Additional Comments” field
AND click the “Commit” button.
- Questions Regarding How To Submit A Datzilla Ticket? Ask the Datzilla Gatekeeper via e-mail!

Corrections For LCD Published ASOS Stations

Question #3 from Climate Focal Points

- **Question:** Why can't WFOs certify data for first order climate sites as they do with Storm Data? NCEI sometimes changes valid numbers WFOs leave on F6s. If the issue is a few problem WFOs, why can't NCEI work with the respective Regional HQs to resolve the issues and improve data QC at the WFO?
- **Answer:**
 - NCEI does work directly with the WFO's to resolve the issues on F-6's and try to help improve data QC. This includes NCEI identifying discrepancies between the F-6's and what is received from the ASOS Feed and getting feedback from the WFO's. (**see next slide**)

Corrections For Incoming Data From LCD Published ASOS Stations



For further advisement, please e-mail
Blake Lasher (Blake.L.Lasher@noaa.gov).

NCEI's Feedback Loops To NWS WFO's

NCEI's Feedback Loops To NWS WFO's

- CD Quality Assurance Reports (QAR's)
- Preliminary Run of the CD Publications
 - Extremes Check
 - Excel Checklist w/ Questioned Stations for WFO's
- GHCN-Daily Flag Files (**Coming Soon**)
- Customer Inquiries
- Datzilla Ticket Submissions
- Server Outages (CDO, IPS, EV2, HOMR)

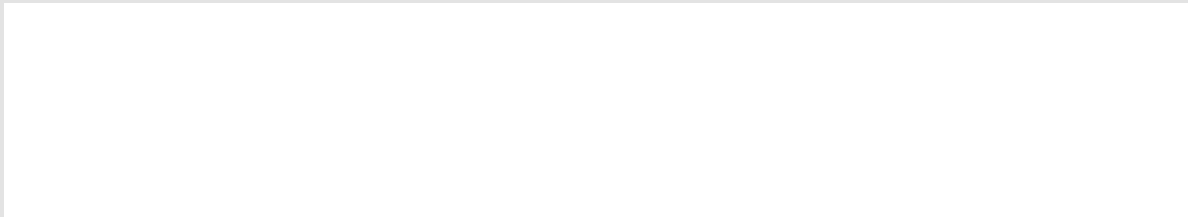
CD Quality Assurance Reports (QAR's)

- One of the following criteria must be met for a station to appear in the CD QAR's:
 - Total Number of Missing/Invalid TMAX values totals **9** or greater
 - Total Number of Missing/Invalid TMIN values totals **9** or greater
 - Total number of Temperature Inconsistencies totals **8** or greater
 - Same day's TMAX is less than previous day's TMIN
 - Same day's TMAX is less than same day's TMIN
 - Same day's TMAX is lower than previous day's or same day's TOBS
 - Same day's TMIN is higher than previous day's or same day's TOBS
 - Total Number of Missing/Invalid Precip. Values totals **9** or greater
 - Single-Day PRCP or Multi-Day Accumulated Precip. (MDPR)
- “Precip. Only” stations are included in the QAR's.

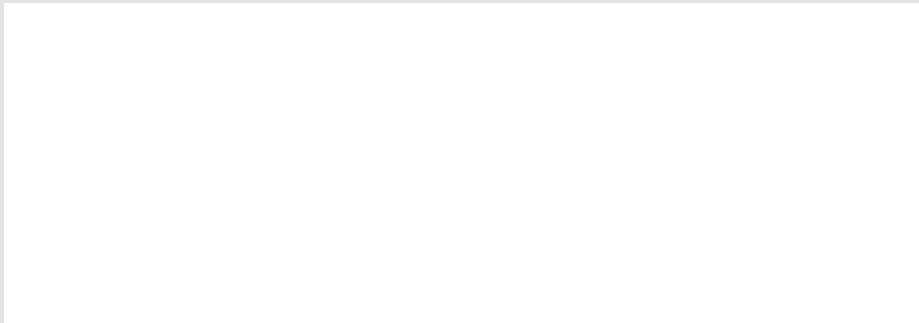
Preliminary Run of the CD Publications

GHCN-Daily Flag File (Coming Soon)

- Will Be Available on GHCN-Daily FTP Site
- Each WFO To Have a Folder



- Each Data-Month To Have a Text File



GHCN-Daily Flag File (Coming Soon)

- All Data Values Flagged By GHCN-Daily For the Data-Month File In Question Will Appear

USC00310645	2016	02	15	SNOW	152	I 7
USC00310645	2016	02	14	SNWD	0	I 7
USC00310645	2016	02	15	SNWD	254	I 7
USC00311248	2016	02	29	TMIN	89	S 7
USC00317344	2016	02	25	SN32	33	I 7
USC00317344	2016	02	26	SX32	17	I 7

- Readme File Explaining Flag File Format Will Also Be Available At the GHCN-Daily FTP Site
- Questions regarding GHCN-Daily's QC:
 - NCDC.GHCND@noaa.gov

Customer Inquiries

Fwd: Error in NYC LCD In February 2013. 📧



Scott Stephens - NOAA Federal

to me, Blake ▾

Feb 9 ☆



Hey guys,

Does this one ring a bell? I figured since it was NYC it might have some kind of history. In any event, it does seem to be wrong in GHCN-D as well.

Thanks

Scott

----- Forwarded message -----

From: **John A. Lombardo**

Date: Tue, Feb 9, 2016 at 3:58 PM

Subject: Error in NYC LCD In February 2013.

To:

Scott,

Good Afternoon! We worked on a case in New York City and when looking through the weather records for Central Park Observatory in New York we noticed that there was likely an error with the data. Note that there was 6.3" of snow that occurred on February 8th, 2013 and there was 5.1" of snow that accumulated on February 9th, 2013, however there is no snow reported at 7:00 a.m. on the 9th of February. We did some digging and we found a PNS Statement that shows that 11.4" of snow was reported at Central Park at 7:00 a.m. on February 9th, 2013. Just an FYI. If you have any questions about my email, please feel free to call me!

Sincerely,

John A. Lombardo

Datzilla Ticket Submissions

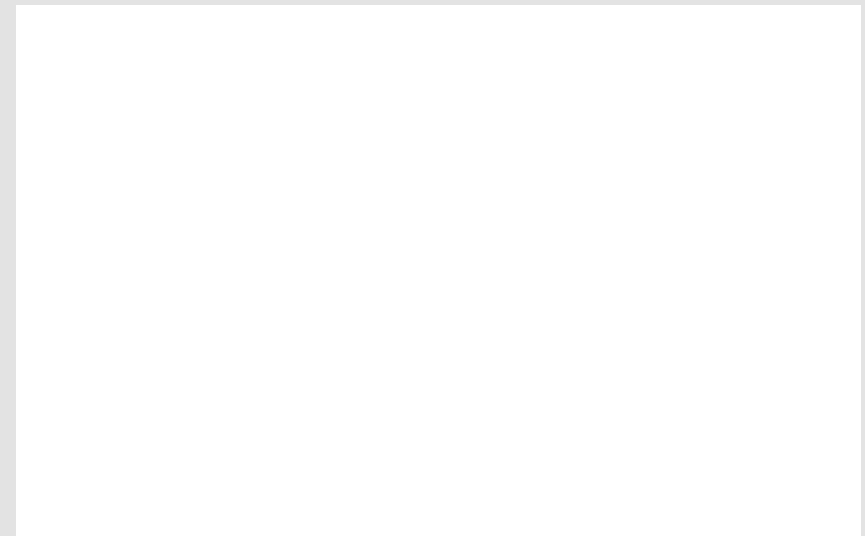
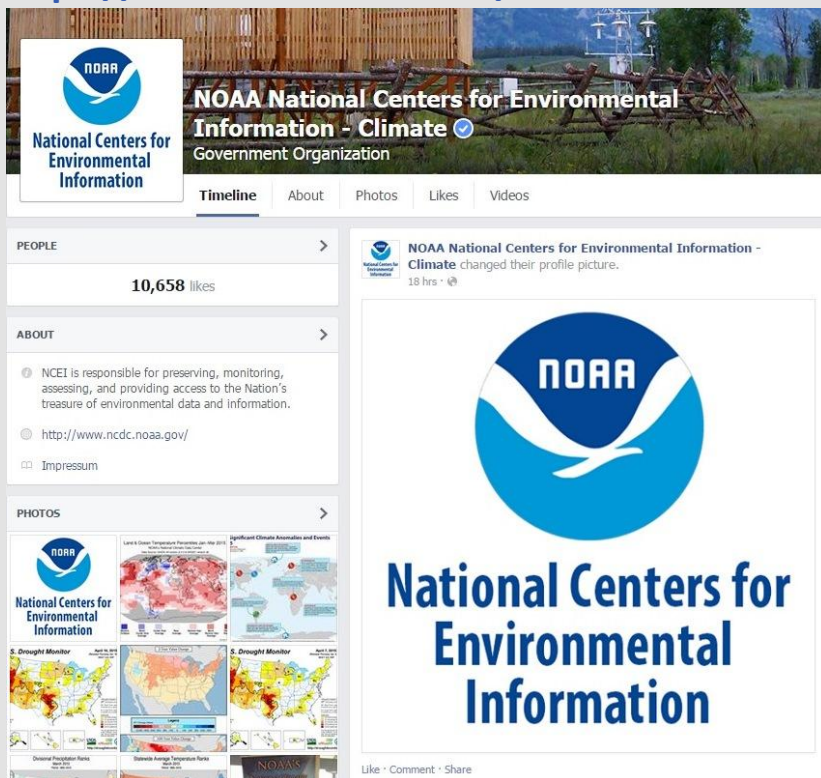
NCEI Server Outages

Questions or Comments

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TO GET THE LATEST NEWS FROM NCEI

NCEI's Website: <http://www.ncei.noaa.gov>